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Date	Version	Changed by	Change Description
20.12.2011	3.0.0	AUTOSAR Administration	• Extracted Project Objectives (UID 599) from Main Requirements (UID 054). • Major rework and update of all Project Objectives to (a) reflect current results and (b) the future focus of the project.

Disclaimer

Advice for users

AUTOSAR Specification Documents may contain exemplary items (exemplary reference models, "use cases", and/or references to exemplary technical solutions, devices, processes or software).

Any such exemplary items are contained in the Specification Documents for illustration purposes only, and they themselves are not part of the AUTOSAR Standard. Neither their presence in such Specification Documents, nor any later documentation of AUTOSAR conformance of products actually implementing such exemplary items, imply that intellectual property rights covering such exemplary items are licensed under the same rules as applicable to the AUTOSAR Standard.

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1 Scope of the document

Each AUTOSAR Partner has committed to the top level project objectives (PO) of AUTOSAR.

The project objectives are the top level requirements of the AUTOSAR standard and get further refined in order to get broken down into the specific technical requirements. For this purpose, the AUTOSAR Project Objectives are established as a fundamental base to derive these specific requirements.

The term AUTOSAR is used as a synonym of the development partnership and the technical product AUTomotive Open System ARchitecture.

2 How to read this document

Each project objective has its unique identifier starting with the prefix “PO” (for “Project Objective”). For any review annotations, remarks or questions, please refer to this unique ID rather than chapter or page numbers.

2.1 Conventions used

In requirements, the following specific semantics are used (taken from Request for Comment RFC 2119 from the Internet Engineering Task Force IETF)

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119. Note that the requirement level of the document in which they are used modifies the force of these words.

- MUST: This word, or the terms "REQUIRED" or "SHALL", mean that the definition is an absolute requirement of the specification.
- MUST NOT: This phrase, or the phrase „SHALL NOT“, means that the definition is an absolute prohibition of the specification.
- SHOULD: This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
- SHOULD NOT: This phrase, or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
- MAY: This word, or the adjective „OPTIONAL“, means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation, which does not include a particular option, MUST be prepared to interoperate with another implementation, which does include the option, though perhaps with reduced functionality. In the same vein an implementation, which does include a particular option, MUST be prepared to interoperate with another implementation, which does not include the option (except, of course, for the feature the option provides.)

3 The AUTOSAR project objectives

This chapter describes the project objectives of AUTOSAR. They are used as the basis for further refinement into the AUTOSAR Main Requirements which drive the specific technical requirements to build the AUTOSAR standard. Besides these technical requirements, there are non-technical requirements, such as new business model etc., which are not considered in the project objectives.

3.1 [PO1] Transferability of software

ID:	PO1
Initiator:	Executive Board
Date:	18.10.2011
Short Description:	AUTOSAR shall support the transferability of software.
Description:	AUTOSAR shall enable OEMs and suppliers to transfer software across the vehicle network and to reuse software.
Rationale:	Transferring software across the vehicle network allows overall system scaling and optimization. Redevelopment of software is expensive and error prone.
Use Case:	Application software is reusable across different product lines and OEMs. Scaling and optimizing of vehicle networks by transferring application software. Basic software is reusable across different ECUs and domains.
Dependencies:	PO3, PO4, PO7, PO8
Supporting Material:	--

3.2 [PO2] Scalability to different vehicle and platform variants

ID:	PO2
Initiator:	Executive Board
Date:	18.10.2011
Short Description:	AUTOSAR shall support the scalability to different vehicle, platform variants.
Description:	AUTOSAR shall provide mechanisms to develop systems, which can be adapted to different vehicles, platforms and ECU hardware capabilities.
Rationale:	Software functions can be used in ECUs with different hardware characteristics.
Use Case:	Integration of an application on a different or updated hardware platform Development of an application which can be configured to be integrated on different vehicles.
Dependencies:	PO8
Supporting Material:	--

3.3 [PO3] Different functional domains

ID:	PO3
Initiator:	Executive Board
Date:	18.10.2011
Short Description:	AUTOSAR shall support a broad variety of functional domains.

Description:	AUTOSAR shall support a broad variety of domains, this includes but is not limited to: • body/comfort, • driver assistance systems, • power train, • chassis control, and • occupant and pedestrian safety. AUTOSAR shall support data exchange with non AUTOSAR systems.
Rationale:	A common architecture across the functional domains allows the relocation of software components across domains. It increases the degree of freedom at generating the E/E system.
Use Case:	Communication of AUTOSAR ECUs with infotainment ECUs. Applying the same software systems to multiple domains.
Dependencies:	PO1
Supporting Material:	--

3.4 [PO4] Definition of an open architecture

ID:	PO4
Initiator:	Executive Board
Date:	18.10.2011
Short Description:	AUTOSAR shall define an open architecture.
Description:	AUTOSAR shall define an open architecture for automotive software which can be maintained, adapted and extended.
Rationale:	Findings from the application of AUTOSAR require maintaining AUTOSAR. Future requirements will increase the necessity to further evolve AUTOSAR. Only common functionality will be standardized by AUTOSAR. Therefore the architecture shall allow individual extensions.
Use Case:	Adaption to new technologies from silicon industry. Integration of drivers for specific hardware.
Dependencies:	PO1, PO5
Supporting Material:	--

3.5 [PO5] Dependable systems

ID:	PO5
Initiator:	Executive Board
Date:	18.10.2011
Short Description:	AUTOSAR shall support the development of highly dependable systems.
Description:	Dependable systems are characterized by the following attributes: • Availability: readiness for correct service • Reliability: continuity of correct service • Safety: absence of unreasonable risk • Integrity: mechanisms to inhibit improper system alteration • Maintainability: ability to undergo modifications and repairs • Security: protecting automotive software systems from unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction which shall be supported by AUTOSAR.

Rationale:	Numerous functions in the automotive domain have requirements on functional safety and/or availability. Automotive systems are characterized by long product life cycles and short reaction times when the need for updates and upgrades comes up. Most of the systems in the chassis and powertrain domain are safety related.
Use Case:	Support x-by-wire systems which have requirements on availability. Software updates and upgrades. Exchange of hardware platforms.
Dependencies:	PO4
Supporting Material:	ISO 26262, http://en.wikipedia.org/wiki/Dependability, http://en.wikipedia.org/wiki/Information_security

3.6 [PO6] Sustainable utilization of natural resources

ID:	PO6
Initiator:	Executive Board
Date:	18.10.2011
Short Description:	AUTOSAR shall support sustainable utilization of natural resources.
Description:	AUTOSAR shall support technologies for sustainable utilization of natural resources. This includes but is not limited to support of • energy efficiency technologies, and • renewable energy solutions.
Rationale:	The demand on support for sustainable utilization of natural resources in vehicles is continuously increasing.
Use Case:	This includes but is not limited to • Support of partial or full shut down of ECUs and/ or networks to reduce electrical power consumption. • Support for sensors and actors to measure and control e.g. energy consumption and exhaust cleaning. • Support of e-mobility to reduce carbon dioxide emission. • Support to build systems to use and handle new energy sources.
Dependencies:	--
Supporting Material:	http://en.wikipedia.org/wiki/Sustainable_energy

3.7 [PO7] Collaboration between various partners

ID:	PO7
Initiator:	Executive Board
Date:	18.10.2011
Short Description:	AUTOSAR shall support the collaboration between various partners.
Description:	AUTOSAR shall support the collaboration between various partners by standardized data exchange formats and support the integration of basic software and application software from various partners on a single ECU via a middleware and across the vehicle network.
Rationale:	The automotive domain is characterized by collaborations between various partners. Coordination of e.g. interface and parameter definitions is an ongoing challenge in distributed development projects. In many ECUs software from different suppliers has to be integrated.
Use Case:	Collaborations between OEMs, 1st tiers, software suppliers, tool and service providers and semiconductor vendors. Tier 1 provides the basic software stack and integrates the application software from the OEM.
Dependencies:	PO1

Supporting Material:	--

3.8 [PO8] Standardization of basic software functionality of automotive ECUs

ID:	PO8
Initiator:	Executive Board
Date:	18.10.2011
Short Description:	AUTOSAR shall standardize basic software functionality of automotive ECUs.
Description:	The basic software functionality shall be standardized by AUTOSAR. This includes but is not limited to access to NVRAM, diagnostics, communication management, ECU state management and OS.
Rationale:	The basic software functionality is similar across different domains. The basic software functionality is similar across different OEMs and suppliers.
Use Case:	Reuse of basic software and application software. Basic software functionality can be provided as a product.
Dependencies:	PO1, PO2, PO9
Supporting Material:	--

3.9 [PO9] Applicable automotive international standards and state-of-the-art technologies

ID:	PO9
Initiator:	Executive Board
Date:	18.10.2011
Short Description:	AUTOSAR shall support applicable automotive international standards and state-of-the-art technologies.
Description:	AUTOSAR results shall be compliant to existing and applicable international automotive standards and state-of-the-art technologies.
Rationale:	Enable AUTOSAR to be used in todays and future systems. Support is required to ensure interoperability with existing systems.
Use Case:	Support of existing and future bus systems (CAN, FlexRay, etc.)
Dependencies:	PO8
Supporting Material:	ISO15765, ISO11898, ISO14229, ISO27145, SAEJ1939

4 References

[Glossary] AUTOSAR Glossary, AUTOSAR_TR_Glossary.pdf

[IEEEElecEng] The Electrical Engineering Handbook, Editor R. C. Dorf, CRC Press

[ISO 11898] Road vehicles — Controller area network (CAN)

[ISO 14229] Road vehicles — Unified diagnostic services (UDS)

[ISO 15765] Road vehicles -- Diagnostic communication over Controller Area Network (DoCAN)

[ISO 26262] Road vehicles — Functional safety

[ISO 27145] Road vehicles — Implementation of WWH-OBD communication requirements

[SAE J1939] Recommended Practice for a Serial Control and Communications Vehicle Network